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TITLE: Poly(ethylene terephthalate)
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AB Polycondensation of bis(β-hydroxyethyl) terephthalate or its mixture with isophthalate in the presence of a phosphate ester, e.g., trimethyl phosphate (I) [512-56-1], and a fused mixture containing 0.0009-0.02 mole % GeO2 [1310-53-8] and .geq.0.035 mole % Sb2O3 [1309-64-4] (mole ratio of Ge to Sb = .leq.0.5) based on the carboxylic acid component of the polymer formed to give polymers [containing .leq.1 weight% diethylene glycol(II) and .leq.20% Sb (based on moles of Sb in Sb2O3)] and spinning the resulting polymers gave fibers with improved brightness and dyeability. Thus, a composition containing dimethyl terephthalate 10,000, ethylene glycol(III) 7500, and Mg acetate 6 parts was heated 3 hr at 150-220.deg. under N to cause transesterification. Excess III was removed by distillation and a product prepared by heating 3.2 parts I and 100 parts III at 175.deg. and 3.2 parts 15:1 weight ratio Sb2O3-GeO2 mixture were added. The mixture was polycondensed 2 hr at 285.deg./2 mm to give poly(ethylene terephthalate) (IV) [25038-59-9], intrinsic viscosity (1:1 PhOH-C2H2Cl4, 25.deg.) 0.761, II content 0.66%, Sb content 3% (based on moles of Sb in Sb2O3), compared to 0.626, 0.61%, and 21% for a polymer prepared similarly in the presence of Sb2O3 instead of Sb2O3-GeO2 mixture IV was spun to give 75 denier (36 filaments) fibers, optical brightness 88.1%, compared to 80.4% for fibers obtained from a polymer prepared similarly in the presence of Sb2O3.